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White Paper

A Guide to Video Transmission Solutions

Abstract

This paper outlines some fundamental concepts around video transmissions that aims to educate and inform those commissioning solutions for their own project.

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A GUIDE TO VIDEO TRANSMISSION SOLUTIONS

CRITICAL CONCEPTS

Before commissioning a provider, it is important that you understand some fundamental concepts. These concepts are critical to the success or failure of your project. As a consequence of not fully understanding these concepts, you might pay a high price for a solution that performs poorly or, in the worst-case scenario, not at all.

As both pioneers and experts in the field of video transmission, Vemotion understand the issues and decisions you may come across. Developed over the past 15+ years Vemotion technology and service is guaranteed to deliver the best experience - be it cost or performance related.

Whilst this section is intended to give you brief overview of the main points, we are always happy to discuss and answer any specific queries you have in relation to your own project.

1. Bandwidth.

Bandwidth is important for many reasons on distributed networks

The core issue for any live transmission solution is bandwidth. This is the amount of data the system needs to deliver a good quality picture in real time.

Bandwidth is measured in Megabits per Second (Mbps) or Kilo Bits Per Second (kbps). It is a measure of how much data a network can transmit. For example, 2.5G can only deliver around 30Kilo Bits per second whereas 4G can deliver multi megabits per second.

Bandwidth is expensive and charged for by usage, so the more you use, the higher your air-time bill. There also needs to be enough bandwidth available to transmit the required video quality.

Video compression is the traditional solution to this problem. The more a video is compressed the less bandwidth required to transmit. Compression however, degrades the image quality, and in some cases destroys it completely.

Vemotion’s fully optimized compression technology delivers higher quality video pictures at lower overall bandwidth usage than the competition.

Our solutions have kept pace with the developments in video technology. Vemotion's video streams look better and cost much less than our competitors. We consistently out-perform other systems on the market - many of which cannot even operate in very low bandwidth situations.

2. Latency.

Latency is the measurement of delay in any given solution.

For example, how long it takes a video to get from one side of the network to the other. Or how long it takes for the camera to move after you move a PTZ joystick.

In latency terms 5 seconds is a long time! It is also the difference between a successful operating system and an unusable one.

Vemotion's transmission protocols (V-TX), minimises latency. With V-TX an operator moving a joystick or pressing a screen immediately sees the result without having to wait for the video to catch up.

3. Reliability.

Distributed networks are notorious for being unstable. They suffer fluctuations in connections and in available bandwidth.

To successfully maintain connections across these networks, systems must have intelligent transmission protocols. Vemotion's V-TX protocol is designed to recognise and adapt the bandwidth to optimise prevailing conditions.

Automatic connection and disconnection is one of the main benefits of our V-TX protocol. This ensures whenever there is a link to the other side of the network, the system connects automatically.
For the client this generates cost savings due to less downtime and its ability to work unattended in most cases. This is not the case with other systems which need human intervention to reconnect.

4. Plug and Play.

Delivering a functional, high performance video transmission system involves some hugely complex issues. The associated technology, clever as it may be, is useless if too complicated to set up and run. Vemotion solutions make set up and connection as easy as possible. Our products are plug and play so your system will be up and running with minimal effort.

Usually, all you need to do to get a Vemotion camera or encoder connected to your network is power it on. Best practices learned through years of working with deployments and installations is built into our systems, enabling a rock-solid performance when connecting equipment.

Pre-configured encoders, sim cards and networks mean that one-man installs are often the norm. The deployment time from power on to a working solution is around 2 minutes.

5. Problem Analysis and Resolution.

In the unlikely event anything goes wrong further down the line, a Vemotion system makes it is easy to diagnose and find the problem. Our systems have built in procedures enabling the user to identify and isolate any problems quickly and effectively. This includes issues caused by external factors, e.g., power, camera equipment or network behaviour. The removal of costly diagnosis minimises downtime and disruption - leading to lower cost and higher performance.

6. Total Cost of Ownership.

Our experience and inherent understanding of these concepts has enabled us to build a solution for live video transmission capable of overcoming many issues encountered in a real world.

All these issues impact on the total cost of ownership of a solution and must be recognised.

For example:

Quality of images – do they provide a good enough picture to operate as you need?

Bandwidth Usage – is the compression efficient to enable the system to use low bandwidths to avoid huge airtime bills?

Reliability – is the system reliable, even in harsh conditions? Can it run in unattended operation mode without the need for human intervention to keep it running?

Plug and Play – is the system quick and easy to deploy within minutes with minimal resource? Can it be redeployed just as easily in the field with minimal downtime?

Maintenance – is the system easy to maintain and support? Can it run with minimal attention?

About Vemotion

Vemotion is a software company that specializes in the transmission of live video over low bandwidth networks. This allows us to integrate with, and complement, fixed CCTV systems with a mobile and portable capability which can then be remotely controlled and served alongside direct video feeds to a wide variety of simultaneous viewers. Vemotion integrates its software into a wide range of solutions, working with the Customer to develop system solutions that work in a timely fashion in the real world.

If you would like to discuss any of the ideas raised in the paper above or would like to know more about Vemotion's products or capabilities, please use the contact details below.

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